Part 8 · Number Search & Magic Square

Work out each answer below, then find it hidden in the digit grid — across, down, diagonally or backwards.

1. ∠P in Example 5
2. Each right angle in the lamp-post problem (Example 7)
3. Angle sum property of a triangle, in degrees
4. Angle sum of a quadrilateral, in degrees
5. ∠BOC in Exercise 6.3, Q.2
6. ∠CDO in Exercise 6.3, Q.2
7. ∠DOC found by the linear pair with ∠BOC
8. Height in metres of the tower, Exercise 6.3, Q.15
9. Shadow of the tower in metres, Exercise 6.3, Q.15

7	2	8	4	9	9	9	1	5	5	0	9	4
3	4	5	1	3	3	6	0	6	4	6	1	7
0	2	7	2	1	0	2	4	0	8	4	2	6
0	3	1	8	0	9	0	7	0	8	8	5	8
5	7	7	7	3	9	5	8	9	8	3	2	3
6	6	9	0	5	3	8	2	9	5	5	2	9
3	0	7	0	1	0	9	2	5	6	3	7	6
1	5	6	2	5	4	1	8	3	2	9	4	7
5	6	1	0	9	2	0	0	9	3	8	5	6
4	3	1	6	5	3	2	3	9	7	0	7	0
0	0	7	4	0	8	1	2	5	1	1	8	3
5	1	4	2	4	5	2	1	9	2	3	8	1
1	2	0	0	3	5	5	8	5	2	9	0	9

☐ 180	☐ 360	☐ 125	☐ 40	☐ 90
☐ 70	☐ 55	☐ 42	☐ 28	

Magic Square — every row, column and diagonal adds to the same total.

A 3×3 grid using the consecutive integers 1–9, one per box, every row, column and diagonal summing to the same magic constant.

8	**1**	

3	**5**	
	9	

Magic constant: 15. Fill the empty cells.

Concept Bingo

Fill the empty grid below with any 16 terms from the bank — in any order, one per box. Then work down the clue list: each clue describes one term without naming it. Cross off a box only when you are sure which term its clue is describing. Get four crossed in a row, column or diagonal and you have bingo.

Term bank — choose any 16:

Similar figures	Congruent figures	Scale factor	Equiangular triangles
Basic Proportionality Theorem	Thales' Theorem	AAA criterion	AA criterion
SSS criterion	SAS criterion	RHS criterion	Median of a triangle
Altitude of a triangle	Corresponding angles	Corresponding sides	Vertically opposite angles
Alternate angles	Angle sum property	Converse of BPT	Transversal

Your bingo card:

Clue list — read each clue and find the term it describes:

① Figures with the same shape but not necessarily the same size.

② Figures with exactly the same shape and the same size.

③ The constant ratio between corresponding sides of two similar figures.

④ Triangles whose corresponding angles are all equal.

⑤ The theorem stating that a line parallel to one side of a triangle divides the other two sides in the same ratio.

⑥ The name given to the theorem above, honouring the Greek mathematician who studied ratios in equiangular triangles.

⑦ The similarity criterion requiring all three pairs of corresponding angles to be equal.

⑧ The similarity criterion requiring only two pairs of corresponding angles to be equal.

⑨ The similarity criterion requiring all three pairs of corresponding sides to be in the same ratio.

⑩ The similarity criterion requiring one pair of equal angles and the two sides including them in the same ratio.

 The similarity criterion for right triangles, comparing the hypotenuse and one other side.

 A line segment joining a vertex of a triangle to the midpoint of the opposite side.

 A line segment from a vertex of a triangle perpendicular to the opposite side.

 Angles in the same relative position at two different intersection points of a transversal with two lines.

 Sides that occupy the same relative position in two similar or congruent figures.

 Equal angles formed on opposite sides of the point where two lines cross.

 Equal angles formed on opposite sides of a transversal, between two parallel lines.

 The fact that the three angles of any triangle always add up to 180°.

 The rule stating that if two sides of a triangle are divided in the same ratio by a line, that line is parallel to the third side.

 A line that crosses two or more other lines at distinct points.

Every triangle you meet from here on can be checked against another with just a handful of matching parts — AA, SSS, or SAS — and the ratios follow for free. △~△ □